EVALUATION OF *'BERHANE HEWAN'*: A PROGRAM TO DELAY MARRIAGE & PROMOTE EDUCATION IN RURAL ETHIOPIA

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ACKNOWLEDGEMENTS

The study was made possible through support from UNFPA, the Nike Foundation and United Nations Foundation. We are grateful to our collaborators the Ethiopian Ministry of Youth & Sport, the Amhara Regional Youth & Sport Bureau, and Kebele officials. Helen Amdemikael, Judy Diers, Nicole Haberland, Anrudh Jain, Tekle Ab Mekbib, Mitike Molla, Eva Roca, Hannah Carter-Menn, and Tesfahun Wondie made very helpful comments on earlier versions of this paper.

ABSTRACT

A substantial proportion of girls in sub-Saharan Africa are married during their childhood, before age 18. Yet few programs have sought to increase marriage age for girls. Berhane Hewan was a two-year pilot project to reduce the prevalence of child marriage in Ethiopia, through social mobilization, support to remain in school, and community awareness. A quasi-experimental research design was used to measure changes associated with the project. The project was associated with changes in educational participation, marriage age, reproductive health knowledge, and family planning use. Girls in the age group 10 to 14 experienced significant increases in educational attendance (odds ratio, 3.0) and decreases in ever having been married (odds ratio, 0.09). However, marriage seemed to accelerate among older girls 15 to 19 (odds ratio, 2.4). Adolescents in the project site were nearly three times as likely to have ever used family planning, compared to girls in the control site.

BACKGROUND

Child marriage is defined as marriage of a young person before the age of 18. The practice affects girls to a far greater extent than boys, with large numbers of girls married early in South Asia and parts of sub-Saharan Africa.[1] Globally, age at marriage is increasing, though in many parts of sub-Saharan Africa, a significant proportion of girls are still married during childhood, before reaching their 18th birthday.[1,2]

Early marriage is considered a violation of human rights and effectively ends girls' opportunities for schooling, skills acquisition and personal development.[3] Generally, girls married early have less education and fewer opportunities, and patterns of early marriage compound girls' vulnerability. The practice often submits a girl to residence in her husband's household where she has low status and little power. After marriage, girls' confinement and isolation increases, likely due to greater domestic duties and control by husbands and senior household members.[4] Marriage marks the beginning of frequent and unprotected sexual activity, often leading to an early and risky first birth.[3,4] The younger a girl is when married, the greater the age difference with her partner, further compromising a girls' status and negotiating power within her marital home.[5]

In many settings, marriage represents increased risk of HIV infection. A study in Kenya and Zambia using biological markers and behavioral data found that married adolescent girls have 50 percent higher rates of HIV compared to girls who are unmarried and sexually active, with elevated rates associated with more frequent intercourse, virtually no condom use, and older partners who are more likely to be HIV+.[6,7] Similarly, in a study of over 1,800 adolescent girls in Zimbabwe, the odds of being HIV positive were doubled for married adolescent girls, compared to unmarried sexually active girls.[8]

Marriage in Ethiopia

Ethiopia has one of the highest rates of early marriage in sub-Saharan Africa. Fully 19 percent of Ethiopian girls are married before their 15th birthday.[9] Nationally, the median age at marriage among Ethiopian women 25 to 49 is 16.1, and 23.8 for men 25 to 59.[10] However, national figures mask considerable differences in levels of early marriage by region. Amhara Region in northern Ethiopia is the second largest region in the country with an estimated population of 19 million. In this region, 50 percent of girls are married by age 15 and 80 percent are married by age 18.[11] On average, married girls in Ethiopia are 9 years younger than their spouses.[12]

The forms of marriage practiced in Ethiopia vary greatly. Most marriages in Ethiopia are arranged by parents, particularly among highland agriculturalists such as the Amhara.[13,14] Normally, the prospective groom's family appoints an elder to conduct negotiations with the girl's family. After an agreement is reached, gifts are exchanged between families, with the balance of exchange favoring the girl's family. In cases of child marriage, arrangements are made until the child-bride can independently manage a household. This could include the girl living with the boy's parents or periodic visits paid by the girl to the boys' family.[15] Among the Amhara and other groups in Ethiopia, tradition dictates that a girl should be married before or at the time of puberty.[14,16]

Most early marriages do not involve consent of the bride. A study among adolescents in Amhara found that only 15 percent of married girls consented to be married, with younger brides less likely to have

given consent. Three percent of girls married before age 10 agreed to the marriage, compared to 42 percent of girls who were married between the ages 16 to 19.[16] Forced marital sexual initiation was a feature of adolescent marriages with 81 percent of married adolescent girls in the sample reporting that first sex was forced against their will.[16] Early marriage frequently leads to early divorce. Amhara region has one of the highest rates of divorce in the world, with early marriage being a predictor of divorce.[14]

The legal age of marriage in Ethiopia is 18 for both girls and boys, and the Ethiopian Constitution states that: "Marriage shall be entered into only with the free and full consent of the intending spouses." [17] However, laws governing marriage are not enforced. The drivers of early marriage in Ethiopia have been described as a combination of cultural, social and economic factors.[15] Marriage builds alliances between families and contributes to the status of parents. If a girl's family is poor, it relieves the economic cost of raising and feeding her, and provides some economic reward through bride price. Many rural Ethiopians believe that a girl who is not married by late adolescence represents a failure and disgrace to the family. In particular, the status of the girls' father is compromised; he is considered a failure when his daughter remains unmarried; in contrast, early marriage of one's daughter is a father's mark of manhood.[15]

Programs to delay marriage

Delaying marriage gives a girl the opportunity to complete schooling, explore positive livelihood choices, and develop more fully as an individual in her own right. Few programs in sub-Saharan Africa have been focused on increasing marriage age, with even fewer including a rigorous evaluation framework. Interventions designed to increase the age at marriage have been largely confined to the Asia region.[2] For example, in India, programs in several states provide families with economic incentives to delay the marriage of a girl, with larger incentives given if the girl remains unmarried until the legal age of 18.[2,3] A program in Nepal combined several approaches including peer education, adult education, youth clubs and theater, with one of the stated goals as increasing marriage age. The impact evaluation suggested impacts on marriage age in the urban area, but not in the rural site. [19] However, the descriptive analysis was insufficient to establish conclusively that the program had made a difference. In Bangladesh, a scholarship scheme for secondary level girls was established, including a monthly stipend and agreement by participating parents not to marry their girls before the age of 18. The impact evaluation reflected changes in marriage age, with 36 percent of girls aged 11 to 19 married prior to the beginning of the project, compared to 32 percent after three years of program implementation.[20]

THE BERHANE HEWAN PROGRAM

Berhane Hewan (meaning 'Light for Eve' in Amharic) is the name given to the program by the community members of Mosebo Kebele Administion[1] (KA) of Amhara Region, the site of the intervention. Berhane Hewan is a program of the Ethiopia Ministry of Youth and Sport and Amhara Regional Youth Bureau and targets married and unmarried girls aged 10 to 19. The overall goal of Berhane Hewan is to establish appropriate and effective mechanisms to protect girls at risk of forced early marriage and support adolescent girls who are already married. Specific objectives include: 1) to create safe social spaces for the most vulnerable and isolated girls to meet same sex friends and interact with caring adults, 2) to reduce the prevalence of early, child marriage among adolescent girls; and 3) to

[1] A Kebele Administration (KA) is the lowest administrative unit in Ethiopia and roughly equivalent to a village.

increase use of reproductive health services among sexually experienced girls. The intervention included three components: 1) social mobilization and group formation by adult female mentors, 2) participation in non-formal education, including basic literacy and numeracy, and livelihoods training for out of school girls, or support to remain in school, which included an economic incentive, and 3) 'community conversations,' a technique engaging the community, at large, in discussion on key issues, including early marriage, and collective problem-solving. The pilot project was undertaken in one kebele administration (KA) in rural Amhara Region and pilot-tested over two years, from mid 2004 to 2006.

Social mobilization & group formation

In the initial stages of the intervention, four female mentors were recruited. Mentors were leaders in the community and all had a minimum of 10th grade education; many had experience in providing non-formal education. Mentors received a five-day training which covered topics such as: providing non-formal education, reproductive health, HIV/AIDS, and facilitation techniques. Following training, mentors went door to door in Mosebo Village, identifying married and unmarried girls aged 10 to 19, and sensitizing the community on the Berhane Hewan project. Ultimately, eligible girls were invited to participate and permission was sought from their parents or guardians.

Participation in girls' groups & support to remain in school

Participating girls were given three options for involvement in the program. Girls who were still in school, were supported to remain in school with the provision of school materials such as exercise books, pens, and pencils. In addition, out-of-school girls who wanted to return to formal schooling were supported with the same materials. Each participating girl received about 36 Birr or the equivalent of US $4 in school materials over the course of a year. For other out-of-school girls, or girls who had never attended school, groups were formed to meet with mentors, providing non-formal education, livelihoods skills and activities, and reproductive health education and referrals. Meetings were held in existing community structures, such as community meeting halls. Girls were separated into groups of married and unmarried girls. Because of constraints on their time, married girls groups met once a week, generally on Sundays. Unmarried girls groups met five times per week. Meetings were held in community halls or other public facilities. Non-formal education was taught in each of the sessions, using the Ethiopia Ministry of Education curriculum. In addition, girls learned livelihoods skills such as agricultural techniques, poultry rearing, and construction of household items, including mud seats and household partitions. Young women who wanted family planning and other reproductive health services were referred by mentors to the health center in a nearby regional town, Adet. In government facilities, family planning is free and the cost of the clinic card (20 Birr or about US $ 2.20) was supported by the project.

When girls registered for the program, commitment of the parents or guardians was sought. Both the participating girl and her guardian was required to sign the registration form. Among girls who were unmarried, registering parents agreed the girls would not be married during the duration of the two-year program. They also agree to allow girls to attend the program meetings. Families who did not marry girls during the two year period and whose girls attended at least 80 percent of the group sessions, were promised a goat at the end of the period, to be presented jointly to the girl and her family. At the time of graduation, goats were worth approximately 180 Birr, or the equivalent of US $ 20.

'Community conversations' on harmful traditional practices

At the community level, neighborhood meetings were held to discuss child marriage and other issues affecting the well-being of adolescent girls. 'Community conversations' (CC) is a technique developed in Ethiopia using participatory community dialogue to explore problems and jointly devise solutions.[21] Meetings include all community members, collectively, regardless of age, sex, or socio-economic status. Four facilitators were trained to lead discussions on early marriage, other harmful traditional practices, and matters effecting young women and girls. Community conversations were held in Mosebo every two weeks, generally on Sundays or public holidays, engaging all community members in discussions and problem resolution. The participatory nature of the meetings and step-wise progression of collective problem-solving encouraged high levels of participation.

METHODOLOGY

The aim of the study was to assess changes associated with the Berhane Hewan program. Baseline and endline surveys were compared in experimental and control sites to assess population-level changes associated with the project. The baseline survey was conducted in early 2004 in Mosebo KA/Village and two other villages in Yilmana Densa District, eventually removed from analysis. Enamirt KA/Village in Mecha District served as the control at both rounds of study, selected because of its similar socio-economic profile. Shortly after completion of the baseline survey, implementation of the Berhane Hewan program began in Mosebo. The endline survey took place in 2006 in both experimental and control areas.

Data collection

Similar sample selection and data collection techniques were utilized during both rounds of survey, baseline and endline. All households in the study area were listed, collecting basic demographic information on all household members within the two villages. All households with male or female adolescents between the ages of 10 and 19 were considered eligible at baseline, however, only households with female adolescents were included at endline. The number of adolescents selected from each village was proportionate to the size of the population. In the case of households with more than one eligible adolescent aged 10 to 19, a Kish grid[22] was used to select one adolescent.

Local interviewers were recruited from the study areas to administer the surveys. Minimum qualifications included prior interviewing experience, and a secondary school education. All interviewers were relatively young in age, so as to make adolescents more comfortable and responsive. Interviewers received a one-day training prior to the initial household listing and an additional five-day training before conducting surveys. During the training, they reviewed each item on the survey and engaged in practice and mock interviews. Interviewers made up to three attempts to locate and interview selected adolescents. Due to the sensitive nature of the topics covered in the surveys, adolescents were interviewed by interviewers of the same gender. Interviews generally took place at the respondent's household, with interviewers ensuring auditory privacy during the interview process.

The survey instrument was largely close-ended. Topic areas included household composition and assets, education, time use, migration, attitudes and expectations, reproductive health knowledge and practice, marriage, pregnancy and childbirth, and sexual activity. The baseline and endline questionnaires were identical, with the exception that the endline questionnaire also included questions on exposure to the

intervention. The questionnaire was translated into Amharic and back-translated to English to ensure accuracy. Interviewers obtained informed consent from all respondents and all resident parents or guardians. Completed questionnaires were checked by supervisors for data quality and completeness. Data was entered into Epi-Info and later converted to SPSS for analysis.

The baseline survey was originally conducted in three villages (KA's) within Yilmana Densa Woreda, and the control village, Enamirt, with both male and female adolescents interviewed at baseline. In order to assess the impact of the program on Mosebo girls, the boys were removed from the baseline dataset as well as respondents from the two additional villages in Yilimana Densa District, where intervention activities did not take place.

Measures

The main aims of the project were to increase girls' access to safe social spaces, including the school, to reduce the prevalence of child marriage, and to increase the use of reproductive health services among sexually experienced young women. Respondents having made new friends in the last year and having best friends outside the family were used as indicators of increased friendship networks. Together with school status indicators, these measures were used to reflect whether or not the project had achieved its objectives with regard to increasing safe social spaces.

Respondents were asked if they had ever attended school and if they were currently attending school. Marriage was measured by asking respondents if they had ever been married. In addition, a follow up question, "Have you ever been married but later divorced?" was included to minimize underreporting of marriage by formerly married young women. Using the respondent's current age and age at marriage, a variable was constructed to reflect whether respondents had been married in the year prior to survey. This variable was used to compare the proportion of girls married in the previous year at baseline with those at endline, with marriages in the previous year at endline reflecting the time period during which Berhane Hewan was underway. Sexually experienced respondents were asked if they had ever used family planning methods, with the list of methods read one-by-one as a probe. Socio-economic status (SES) was measured using a battery of questions on 15 household amenities and assets, derived from the Ethiopia Demographic and Health Survey (DHS). The socio-economic index variable was then created to reflect poorer households, those with five or fewer items, and wealthier households, those with six or more items. The continuous SES variable was used in multivariate analysis.

Analysis

Other than the sample characteristics, all analyses were weighted by the number of eligible females in the household, with weighted numbers reported in the tables. Descriptive statistics were calculated for outcomes of interest in experimental and control sites, comparing changes between baseline and endline. Because changes and transitions may take place differently for younger versus older adolescents, analysis was stratified by age group. For categorical variables, Pearson chi-square tests were used to assess differences between groups for each survey period. In addition, for school status, marriage and ever use of family planning, logistic regression or proportional hazard models were used, at each round of survey. Multivariate analysis controlled for age of respondents, socio-economic status, and educational attainment. In particular, we were interested in the extent to which residence in the experimental area was

associated with positive outcomes in the dependent variable. If residence was not significant at baseline but was significant at endline, we considered differences attributable to the intervention.

RESULTS

Sample characteristics

A total of 460 baseline respondents were included in the evaluation: 188 girls from Mosebo Village, the experimental area, and 272 girls from the control village, Enamirt. Fewer experimental respondents were included at baseline compared to the control group; a number of baseline respondents were removed from analysis as the intervention did not take place in their localities, as had been anticipated. The endline sample included 462 girls from the pilot site and 464 from the control site (Table 1).

Table 1: Sample characteristics in control and experimental area, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=188)	**Control (n=272)**	**Project (n=462)**	**Control (n=464)**
Age Category				
10 to 14 years	56.9	49.4	54.1	53.2
15 to 19 years	43.1	50.6	45.9	46.8
School status				
In school	52.7	48.2	71.2	68.8
Out of school	47.3	51.8	28.8	31.2
Educational attainment				
No education	43.9	44.9	23.5***	26.2
1 to 4 years	38.5	39.3	49.8	36.0
5 to 8 years	16.6	15.1	20.2	32.3
9 or more years	1.0	0.7	6.5	5.4
Marital status				
Never married	71.8*	59.9	76.0	74.8
Currently married	23.4	31.6	21.3	20.2
Div/Wid/Sep	4.8	8.5	2.7	5.0
Parenthood				
Has child(ren)	7.6***	21.7	14.8	14.2
No children	92.4	78.3	85.2	85.8
Parental co-residence				
Both parents	41.7	40.7	46.7	48.6
Mother only	18.7	16.8	21.3	19.2
Father only	7.0	6.3	4.8	6.3
Neither parent	32.6	36.2	27.2	25.9
Socio-economic index				
0 to 5 household items	77.0**	62.9	57.0***	24.9
6 to 15 household items	23.0	37.1	43.0	75.1

Note: Unweighted N's reported; Differences between groups significant at $^{*}p<.05$ $^{**}p<.01$ $^{***}p<.001$

There were no significant differences between groups at baseline and endline in terms of age, school status, and parental co-residence. At baseline, girls in the experimental sites significantly differed from the controls in terms of marital status, parenthood status and socio-economic status. A greater proportion of girls in the experimental site had never been married (72 percent) compared to girls from the control group (60 percent), and they were less likely to have children (8 percent in experimental site, 22 percent in control site). Educational attainment differed between groups at endline. For example, girls in the control group were significantly more likely to have completed at least 5 years of education (38 percent) compared to girls in the project site (27 percent). Control households scored higher on the socio-economic status index than households in the experimental area, at both baseline and endline. This difference was particularly evident at endline, where 75 percent of controls and only 43 percent of experimental households had 6 or more household items.

Exposure to Berhane Hewan

Exposure to the Berhane Hewan intervention was assessed at endline among all survey respondents. The results indicate that there was no contamination of the control group, and the intervention was widely implemented in the experimental area. While 92 percent of girls in Mosebo had heard of the Berhane Hewan project, none of the girls in the control area had ever heard of the project. About half of the girls in the experimental area had been supported to remain in formal schooling, one-fifth participated in a non-formal education group for unmarried girls, and 10 percent of girls participated in a married girls club (Table 2). Participation in Berhane Hewan groups differed significantly by age. Almost two-thirds of girls (65 percent) aged 10 to 14 participated in formal schooling groups and none participated in married girls clubs. At the same time, 37 percent of girls aged 15 to 19 participated in formal schooling and 22 percent participated in married girls clubs. Roughly three-quarters of girls had attended community conversations. The most common discussions they attended were those devoted to early marriage (72 percent) and HIV/AIDS (70 percent). Girls in the older age group were significantly more likely to have attended community meetings about community issues, family planning and safe motherhood.

Table 2. Participation in Berhane Hewan Program, among girls in experimental area

Program Component	Age 10 to 14 (n=367)	Age 15 to 19 (n=301)	All girls (n=678)
Participation in group			
Formal schooling support	65.4	37.2	52.1
Unmarried girls' group	22.3	23.3	22.9
Married girls group	0.0	22.3	10.0
Did not participate	*12.3*	*16.3****	*14.6*
Attended community conversation on:[1]			
General community matters	36.0	47.0**	41.0
Early marriage	72.0	72.5	72.0
HIV/AIDS	68.7	72.8	70.3
Family planning	48.5	62.8***	54.9
Safe motherhood	32.4	56.4***	43.5
Did not attend	*26.7*	*27.3*	*26.9*

[1] *Percentages sum to over 100 as more than one meeting was possible.*
Differences between groups significant at $^{*}p<.05$ $^{**}p<.01$ $^{***}p<.001$

Social Networks & Education

Berhane Hewan provided adolescent girls with opportunities to expand their social networks by participating in same-sex groups led by adult female mentors. At baseline, girls from Mosebo were significantly less likely to have made new friends in the last year (4 percent of experimental girls versus 16 percent of controls). Likewise, they were less likely to report a non-familial best friend (30 percent of experimental respondents versus 48 percent of controls). At endline, none of these indicators differed significantly, likely owing to the considerable improvements observed among Mosebo girls as compared to controls. In Mosebo, the proportion of girls who made new friends in the previous year increased from 4 percent at baseline to 18 percent at endline, while the rate for controls stayed the same (16 percent at baseline; 15 percent endline). At endline, virtually equal proportions of girls in the two sites reported a non-familial best friend (51 percent of Mosebo girls and 54 percent of Enamirt girls) (*results not shown*).

Increasing girls' access to formal and non-formal education was an important component of Berhane Hewan, which provided opportunities for girls to enroll in specialized non-formal education or continue their schooling in formal education. There were substantial improvements in education enrollment in both the control and experimental areas during the study period (Table 3). The overall change might be attributed to general intensification of efforts in Ethiopia related to education and achievement of the Millennium Development Goals (MDGs).

Table 3. Educational attendance, attainment, literacy and marriage in experimental and control sites, by age group and time of survey

	Age 10 to 14				Age 15 to 19			
	Baseline		Endline		Baseline		Endline	
	Project (n=169)	Control (n=209)	Project (n=367)	Control (n=348)	Project (n=113)	Control (n=205)	Project (n=301)	Control (n=273)
Education								
Ever attended school	70.8	81.8*	96.5	93.4	44.2	34.6	60.3	58.2
School Status (In)	69.6	77.5	95.9**	89.0	38.4	27.3	48.5	54.2
Mean yrs of education	2.3	2.5	2.7	3.7***	2.9	1.7	3.5	4.0
Literacy								
Reads easily	33.9	31.6	40.3	50.3*	25.0	18.5	36.9	41.8
Reads with difficulty	21.4	40.2	38.4	30.7	16.1	11.2	17.3	11.7
Does not read at all	44.6	28.2***	21.3	19.0	58.9	70.2	45.8	46.5
Marriage								
Ever married	9.5	13.9	1.6	22.1***	46.0	57.1	45.8***	29.7
Married in the last yr[a]	1.3	1.6	0.0	4.8***	8.6	19.8*	7.4	3.9

Differences between experimental and control groups significant at $^{*}p<0.05$ $^{**}p<0.01$ $^{***}p<0.001$
[a] *Only includes respondents who were not yet married two years before the survey period.*

At baseline, 71 percent of experimental girls and 82 percent of control girls aged 10 to 14 had ever attended school, a difference that was statistically significant. By endline, ever attendance had increased substantially in both sites, with 97 percent of girls 10 to 14 in the project site attending school and 93 percent in the control site. Moreover, while 10 to 14 year olds in the experimental site were disadvantaged at baseline, at endline, there were no differences between the sites. Similarly, 96 percent of Mosebo girls were in-school at endline compared to 89 percent of control girl, a significant difference between groups.

A similar pattern was observed in regards to literacy. Approximately 45 percent of younger girls in Mosebo and 28 percent in the control group could not read at baseline. This proportion was reduced to about the same level at endline (21 percent in Mosebo; 19 percent in Enamirt). However, the mean years of education were significantly higher among girls in the control group (2.7 years in experimental area versus 3.7 years in the control site). Among older adolescents, changes in school status were less clear, with increases in enrollment between surveys, but no apparent differences between study sites.

Weighted logistic regression was conducted to examine the effect of the treatment group (experimental or control) on school status, after adjusting for other factors: age, socio-economic status, and marital status (Table 4). Among the age group 10 to 14, girls in Mosebo were half as likely to be in school at baseline, compared to girls in the control area. At endline, Mosebo girls were nearly three times as likely to be in school compared to girls in the control group, suggesting that the intervention was effective in getting girls back to school.

Among older girls, there were no significant differences in school status between girls in the experimental or control area, either at baseline or at endline. Among this older group of girls, factors that were significantly associated with the likelihood of being in school were age, socio-economic status and marriage.

Table 4: Weighted logistic regression for predictors of school status (in school), by age group & time of survey

	Respondents aged 10 to 14				Respondents aged 15 to 19			
	Baseline (n=377)		Endline (n=709)		Baseline (n=317)		Endline (n=572)	
	OR	P-value	OR	P-value	OR	P-value	OR	P-value
Age	1.292	0.006	0.943	0.601	0.528	0.000	0.486	0.000
Socio-economic index (0 - 15)	1.230	0.004	1.109	0.085	1.254	0.012	1.124	0.004
Ever married (yes)	0.152	0.000	0.645	0.271	0.037	0.000	0.119	0.000
Site								
Project	0.569	0.029	2.986	0.008	1.747	0.105	1.347	0.191
Control (ref)	1.00	-	1.00	-	1.00	-	1.00	-

Marriage

Though most girls in this setting do not decide upon the timing of marriage, the evaluation assessed girls' attitudes regarding ideal marriage age. When asked the age at which they would like to get married, at baseline 11 percent of Mosebo girls and 5 percent of control girls named an age younger than 18 years, a difference that was statistically significant. At endline, only 3 percent of both Mosebo and control girls mentioned an ideal marriage age lower than 18 years *(results not shown)*.

The study assessed changes in marriage age among girls in the experimental and control areas (Table 3). Among girls aged 10 to 14 at baseline, there were no significant differences between experimental and control girls in terms of percent ever married or having been married in the last year. At endline, the proportion of ever married younger girls in the experimental site decreased from 10 percent to 2 percent. In the control area, the proportion of ever married 10 to 14 year olds increased from 14 percent to 22 percent. When the sample is restricted to girls who had not been married two years before the study period, a similar pattern is observed. The proportion of girls who got married in the previous year increased from 2 to 5 percent in the control group. In Mosebo, 1 percent of younger girls had married in the previous year at baseline, while not one girl aged 10 to 14 had married in the previous year at endline.

Among older adolescents, there were no significant differences at baseline in terms of marital status, with 46 percent of Mosebo girls 15 to 19 having ever been married, compared to 57 percent of control girls. At endline, significantly more Mosebo girls had ever been married (46 percent) compared to 30 percent of girls 15 to 19 in the experimental area. However, the percentage of Mosebo girls 15 to 19 who were married did not change between baseline and endline. The percentage of girls in the control group who were married in the previous year declined substantially, from 20 percent at baseline to 4 percent at

endline. Among Mosebo girls, the percentage of 15 to 19 year olds married in the previous year remain relatively stable, from 9 percent at baseline to 7 percent at endline.

The proportional hazard model predicting marriage is shown in Table 5, stratified by age group. Among girls 10 to 14 at baseline, age, socio-economic status and years of education were significant predictors of marriage. As expected, the odds of being married increased with age and decreased with years of education. At endline, however, Mosebo girls were 90 percent less likely to have ever been married than girls in the control group, suggesting that Berhane Hewan was associated with delaying marriage among girls aged 10 to 14.

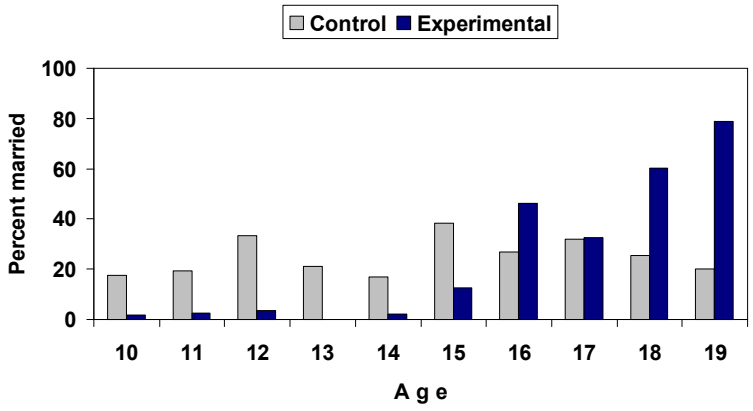
Table 5: Proportional hazard model for predictors of marital status, by age group & time of survey

	Respondents aged 10 to 14				Respondents aged 15 to 19			
	Baseline (n=374)		Endline (n=699)		Baseline (n=337)		Endline (n=710)	
	OR	P-value	OR	P-value	OR	P-value	OR	P-value
Age	1.307	0.022	0.741	0.002	1.054	0.379	0.985	0.795
Socio-economic index (0 - 15)	1.245	0.025	1.035	0.494	1.114	0.025	1.200	0.000
Number of years of education	0.764	0.003	1.022	0.716	0.674	0.000	0.833	0.000
Site								
Project	0.661	0.220	0.093	0.000	0.867	0.425	2.412	0.000
Control (ref)	1.00	-	1.00	-	1.00	-	1.00	-

Differences between experimental and control groups significant at $^{*}p<0.05$ $^{**}p<0.01$ $^{***}p<0.001$

Among girls in later adolescence, age 15 to 19, socio-economic status and years of education were predictive of being married. At endline, however, girls 15 to 19 in the intervention site were nearly 2 ½ times as likely to be married compared to girls in the control site. Paradoxically, while delays in marriage were associated with the project for younger girls, older girls in the project site seemed more likely to married. Figure 1 shows the percentage of girls married at endline, by age. While few girls in the experimental area were married during early adolescence, marriage of girls in Mosebo appears to accelerate after the age of 15. At the same time, girls in the control area seems to married at fairly constant rates across ages.

Figure 1: Percent of adolescent girls married at endline, by age & area of residence



Reproductive Health

Table 6 shows the proportion of girls in the experimental and control groups who correctly answered various knowledge questions related to family planning, HIV/AIDS and sexually transmitted infections (STIs), who had communication on RH issues in the previous year, and who have ever used family planning. Girls in the experimental site were significantly more likely to know about contraceptive pills than girls in the control group at both baseline and endline. On all other knowledge questions, at baseline, there were either no significant differences between groups or Mosebo girls were significantly less knowledgeable than controls. At endline, Mosebo girls were significantly more likely to know about Depo Provera, condoms, STI diagnosis, the primary mode of HIV infection, the lack of a cure for AIDS, and fact that a healthy-looking person can be infected with HIV.

Table 6: Reproductive health knowledge, communication and family planning use among experimental and control groups, by time of survey

	Baseline (2004)		Endline (2006)	
	Project (n=188)	**Control (n=272)**	**Project (n=462)**	**Control (n=464)**
Percentage of respondents aware of FP methods:				
Pills	86.2**	77.2	91.1**	86.3
Depo/injectables	85.5	82.9	90.7**	85.5
Condoms	26.2	36.2**	32.1***	16.2
Do no know any method	11.4	13.9	7.6	10.8
Percentage with STI/HIV/AIDS knowledge:				
Know a woman cannot always tell if she has an STI	31.0	38.8*	29.1	31.3
Know a woman cannot always tell if a man has an STI	35.6	41.1	60.9***	45.2
Know a healthy looking person can be HIV+	65.2	77.9**	88.2***	71.8
Know that most people don't get HIV from sharp objects	24.1	23.8	34.4	32.4
Know that there is no cure for HIV/AIDS	53.4	64.9**	88.5***	77.8
Mentioned intercourse as HIV transmission mode	78.7	84.7*	92.9*	89.2
Percentage who discussed topics in last year				
HIV/AIDS	30.1	34.9	79.4***	58.5
Sexually transmitted infections	28.0	28.6	50.1***	32.2
Family planning methods	29.5	37.7*	58.1***	44.8
Condoms	13.0	21.4*	24.3**	18.1
Violence in your community	24.9	38.2**	50.8**	41.5
Problems in your marriage[a]	55.6	55.9	81.6***	23.5
The kind of spouse you would like[b]	10.9	10.8	13.9	25.2**
	Project (n=58)	**Control (n=119)**	**Project (n=143)**	**Control (n=145)**
Pills	34.5	23.3	28.7	21.4
Depo/ injectable	34.5	31.0	66.4***	42.1
Condoms	5.2	1.7	2.1	0.0
Ever use of any method	43.2	36.1	74.1***	44.8

Differences between experimental and control groups significant at $^{*}p<0.05$ $^{**}p<0.01$ $^{***}p<0.001$
[a] *Among respondents who are married;* [b] *Among respondents who are not married*

At baseline, Mosebo girls were significantly less likely to talk to their closest friends about family planning, condoms, and violence in their communities. At the end of the study period, however, girls in Mosebo were significantly more likely to discuss all items mentioned except for the ideal spouse. For example, 79 percent of Mosebo girls had discussed HIV/AIDS with their closest friend compared to 59 percent of girls in the control group. Among girls who were married, 82 percent of Mosebo girls and 24 percent of control girls had talked to their closest friends about problems within their marriage. Between

baseline and endline, the proportion of girls who discussed family planning methods increased by 18 percent in the control group and by 97 percent in Mosebo.

Sexually active girls were asked about ever use of family planning, with all but two of the sexually active girls being ever married.[2] There were no significant differences in family planning use at baseline. Use of contraceptive pills reduced slightly in both groups between baseline and endline. At endline, girls in Mosebo were significantly more likely to use injectables (66 percent) than girls in the control group (42 percent). Ever use of any family planning method was significantly higher in the experimental area at endline, mainly attributable to increases in injectable use, with 74 percent of sexually active girls in the experimental area ever having used a method, compared to 45 percent of control girls.

Results for the logistic regression model predicting ever use of a family planning indicated that there were no significant differences in family planning use by treatment group at baseline. At endline, girls in the experimental area were nearly 3 times as likely to have used family planning compared to girls in the control area. At baseline, girls with higher levels of education attainment and higher socioeconomic status were significantly more likely to use family planning. None of these control variables were significant at endline.

Table 7. Weighted logistic regression for ever use of family planning among sexually experienced girls, by time of survey

	Baseline (n=175)		Endline (n=285)	
	OR	**P-value**	**OR**	**P-value**
Age	0.913	0.001	1.011	1.011
Socio-economic index (0 - 15)	1.220	0.021	0.978	0.686
Number of years of education	1.601	0.021	0.940	0.191
Site				
Project	1.332	0.424	2.876	0.003
Control (ref)	1.00	-	1.00	-

DISCUSSION

The Berhane Hewan Project was developed to address high rates of child marriage in rural Amhara region, Ethiopia. The program is one of the first of its kind in sub-Saharan Africa to explicitly address child marriage and include a mechanism to rigorously evaluate the project. The intervention used a combination of social mobilization to combat isolation of girls, promotion of school attendance, whether formal or non-formal, incentives for school attendance and delaying marriage, and participatory community conversations on early marriage, other harmful practices and reproductive health. The design of the intervention acknowledged that the reasons for child marriage are complex and should

[2] Note that this sub-sample only includes 119 controls and 58 experimental girls at baseline, and 145 controls and 143 experimental girls at endline.

simultaneously address girls' low status and isolation, educational and livelihood opportunities, economic drivers of the practice, and societal norms and pressures. Berhane Hewan is a package of interventions including multiple components at the community and individual levels. High levels of exposure to all project components make it difficult to ascertain if specific program components were more influential in bringing about change than other components.

Changes associated with the program were reflected in all outcomes of interest, including friendship networks, school attendance, marriage, RH knowledge and communication, and family planning use. Whereas Mosebo girls had fewer friends and thinner social networks at baseline, their networks had increased by endline, as had communication on such issues as reproductive health, family planning, and family problems. In particular, girls in their early adolescence (age 10 to 14) experienced significant increases in school attendance and delayed marriage, associated with the project. In Mosebo, marriages of girls seemed to be delayed to later adolescence, so while child marriage was still common in the area, the youngest girls were no longer affected by the practice to the extent they had been before. Marriage during adolescence is part of a cultural tradition where the father's status in the community is partly defined by the marriage of his daughter.[15] Given that few marriages in Mosebo occurred before age 15 during the pilot period, but accelerated after age 15, it is likely that the Berhane Hewan project had the effect of deferring the earliest marriages (those among girls under 15 years) to later adolescence. In effect, girls' early adolescence was preserved, giving them a few, critical, extra years to expand social networks, attend school, and develop as individuals.

The increase in family planning use was significant; fully 74 percent of girls in Mosebo had ever used family planning at endline, with virtually all of these being married adolescents. Girls in the experimental site were 3 times as likely to have used family planning compared to control girls. Delaying the age at first birth reduces adverse birth outcomes and, again, affords girls critical years to mature, develop, and explore schooling and livelihoods opportunities.

The Berhane Hewan experiment is one of the first rigorously evaluated programs to delay marriage in sub-Saharan Africa. Results of the evaluation indicate significant impacts on education, marriage and reproductive health. The positive impacts suggest that programs that are well-designed and effectively implemented can, indeed, delay the earliest marriages until later adolescence in a relatively short time period.

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